



# MOTHER TERESA

## COLLEGE OF PHARMACY

### Course Outcomes Of M.Pharm

### Pharmaceutical Analysis

<b>Course Name:</b> MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (theory) <b>Course code:</b> MPA101T, <b>Year of Study:</b> 1yr M.Pharmacy I st Semester	
C 101.1	Principles and instrumentation of UV-Vis, IR, Flame emission spectroscopy along with spectrofluorometry and their applications
C101.2	Principles, Instrumentation, Solvent requirements, chemical shifts of NMR; briefly about FT-NMR and <sup>13</sup> CNMR
C101.3	Understanding Mass Spectroscopy, Ionization techniques, Fragmentation Rules, Mass Analysers, Applications
C101.4	Detailed study of various types of Chromatographies (TLC, HPLC, HPTLC, GC, UPLC, etc), Electrophoresis, X-ray Crystallography
C101.5	Advanced Instrumentation of Potentiometry and Thermal techniques (DSC, DTA, TGA)

<b>Course Name:</b> ADVANCED PHARMACEUTICAL ANALYSIS (theory) <b>Course code:</b> MPA102T, <b>Year of Study:</b> 1yr M.Pharmacy I st Semester	
C 102.1	Impurity and stability studies along with Impurities in new drug substances and residual solvents according to ICH guidelines
C102.2	Structured understanding of Elemental Impurities and stability testing protocols
C102.3	Impurity profiling and degradant characterization in accordance to ICH and WHO guidelines. Biological products stability.
C102.4	Stability testing of phytopharmaceuticals and various biological tests and assays
C102.5	Types of Immunoassays, quantification and Applications

<b>Course Name</b> PHARMACEUTICAL VALIDATION (theory) <b>Course code:</b> MPA103T <b>Year of Study:</b> 1yr M.Pharmacy I st Semester	
C 103.1	Elaborated introduction of Qualification and Validation involving Validation Master Plan, DQ, IQ, OQ, PQ, RQ, FAT, SAT
C103.2	Qualification of analytical instruments and glassware
C103.3	Advanced Validation of Utility Systems (Water, HVAC, Compressed air and Nitrogen) and Cleaning Validation.
C103.4	Analytical Method Validation according to USP and ICH guidelines
C103.5	Rigorous detailing of General principles of Intellectual Property

<b>Course Name</b> : FOOD ANALYSIS (theory) <b>Course code:</b> MPA104T <b>Year of Study:</b> 1yr M.Pharmacy I st Semester	
C 104.1	Classification, analysis, absorption, digestion and metabolism of Carbohydrates and Proteins
C104.2	Study of Lipids and Vitamins in detail (classification, types, analysis, assays, refining, etc)
C104.3	Understanding Food additives, Pigments and Synthetic dyes along with their analysis techniques
C104.4	General analysis of Milk, its constituents, products, adulterants, contaminants and analysis of Fermentation products
C104.5	Characteristic analysis of Pesticides and Legislation regulations of food products according to BIS, Agmark, FDA and USFDA

<b>Course Name:-</b> ADVANCED INSTRUMENTAL ANALYSIS (theory); <b>Course code:</b> MPA201T, <b>Year of Study:</b> 1yr M.Pharmacy II nd Semester	
C 201.1	Advanced instrumental analysis of HPLC, Chiral analysis of pharmaceuticals, Preparative HPLC, Applications
C201.2	Detailed instrumentation of Bio chromatographies, GC and HPTLC
C201.3	Overview of Super critical fluid chromatography and Capillary electrophoresis with method development, CE-MS hyphenation
C201.4	Mass spectroscopy: overview, instrumental advancements in analysis like Tandem, LTQ-Orbitrap etc
C201.5	NMR: overview, analytical advancements like 1D NMR, 2D NMR, COSY, NOESY, LCNMR hyphenation techniques

<b>Course Name:</b> MODERN BIO-ANALYTICAL TECHNIQUES (theory); <b>Course code</b> MPA202T, <b>Year of Study:</b> 1yr M.Pharmacy II nd Semester	
C 202.1	Extraction of drugs and metabolites from biological matrices and Bioanalytical method validation
C202.2	Understanding of Biopharmaceutical considerations in bioanalytical techniques
C202.3	Detailed study of Pharmacokinetics and Toxicokinetics
C202.4	Cell Culture Techniques, cell viability assays, flow cytometry
C202.5	Modern metabolite identification procedures with in vivo drug product performance (BE/BA)

<b>Course Name:</b> QUALITY CONTROL AND QUALITY ASSURANCE (theory) <b>Course code:</b> MPA203T, <b>Year of Study:</b> 1yr M.Pharmacy II nd Semester	
C 203.1	Understanding concepts of QC/QA, GLP, ICH Guidelines Q-Series
C203.2	cGMP guidelines in accordance to USFDA including CDER, CBER, PIC, WHO, EMEA for industrial management and CPCSEA guidelines
C203.3	Detailed analysis of raw materials, IPQC, finished products and developing specifications according to ICH Q6 and Q3
C203.4	Characteristic Documentation in pharmaceutical industry
C203.5	Clear perspective of Manufacturing operations and controls

<b>Course Name:</b> HERBAL AND COSMETIC ANALYSIS (theory) <b>Course code:</b> MPA204T, <b>Year of Study:</b> 1yr M.Pharmacy II nd Semester	
C 204.1	Introduction to Herbal remedies, toxicity and regulations: WHO and AYUSH guidelines
C204.2	Detailed information of Adulteration and deterioration along with Regulatory requirements for setting herbal drug industry
C204.3	Stability testing protocols and monographs of herbal drugs
C204.4	Understanding herbal drug-drug interactions
C204.5	Complete analytical evaluation of cosmetic products according to BIS

<b>Course Name:</b> Research Methodology & Biostatistics (theory) <b>Course code:</b> MRM 301T, <b>Year of Study:</b> 2yr M.Pharmacy 1 st Semester	
C 301.1	Understanding of General research methodology
C301.2	Introduction to Biostatistics
C301.3	Detailed study on protocols of Medical research
C301.4	Clear perspective of CPCSEA guidelines for laboratory animal facilities
C301.5	Importance of declaration of Helsinki rule, additional principles combined with medical care